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INSURANCE INJURY REPORT

I89-1

Passenger Cars, Vans,
Pickups, and Utility Vehicles

Highway Loss Data Institute

Insurance Injury Report
I89-1

Passenger Cars, Vans, Pickups, and Utility Vehicles 1987-89 Models

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SUMMARY

This Highway Loss Data Institute (HLDI) report presents the frequency of claims for injuries to occupants of 1987, 1988, and 1989 model year passenger cars, vans, pickups, and utility vehicles. Results are shown separately for all injury claims and for those claims for which the medical losses exceeded $250, $500, and $1,000.

Principal Findings

Passenger Cars

- Of the cars with the best results, nine are large, five are midsize, and one is a small vehicle. Nine of the 15 were manufactured in the United States and 6 were manufactured in Europe.

- All of the 20 cars with the worst results are small cars. Both the two-door and four-door versions of the Chevrolet Spectrum, Chevrolet Sprint, Hyundai Excel, Isuzu I-Mark, Nissan Sentra, and Pontiac LeMans were among the cars with the worst results. Eighteen of the 20 are imported designs: 12 from Japan, 5 from Korea, and 1 from Yugoslavia.

- Five air bag equipped models headed by the Volvo 740/760 station wagon were among the cars with the best injury loss experience -- others were the Lincoln Continental, Mercedes-Benz SEL/SDL series and 560 SL, and BMW 735i. However, the exposure for most of these series was insufficient to compute results for the more expensive medical losses, where air bags are expected to be most effective.

- Among the cars with the worst injury loss experience, the four-door Chevrolet Spectrum had the highest overall injury claim frequency (85 percent above average) and the highest frequency of claims exceeding $250, $500, and $1,000.

- Overall, small cars had the worst results and large cars had the best, but there was considerable variation among the vehicle series within each size group. For example, among small four-door models, the overall claim frequency of the Chevrolet Spectrum was more than two times that for the Saab 900.

- Injury claims exceeding $1,000, although representing only about one-third of all claims, accounted for nearly 90 percent of the total dollars for medical payments.

Vans, Pickups, and Utility Vehicles

- Among vans, pickups, and utility vehicles, large utility vehicles had the best injury experience; small utility vehicles and small pickups had the worst.

- The two versions of the one-half ton GMC Suburban had the lowest overall injury claim frequencies.

- Two small pickups, the Toyota Standard Bed and Mitsubishi Standard Bed, had the highest overall injury claim frequencies.

- Injury claim frequencies were closely related to vehicle size, with the larger vehicles having lower claim frequencies.

Introduction

The Highway Loss Data Institute (HLDI) is a nonprofit, public service organization that gathers, processes, and publishes insurance data concerned with human and economic losses associated with motor vehicle use, especially with the ways such losses vary among different kinds of vehicles.

This report compares the frequencies of claims for injuries to occupants of 1987 through 1989 model year passenger cars, vans, pickups, and utility vehicles. In addition to the frequencies of all injury claims, results are given separately for the frequencies of claims with medical payments exceeding $250, $500, and $1,000. The results are given for individual vehicle series as well as for various groupings based on vehicle size and body style.

In calculating injury claim frequencies, all injuries in a crash-involved vehicle resulting in claims for medical expenses made under personal injury protection insurance coverages are counted as a single claim. The specifications of injury coverages, which principally insure against medical losses to occupants of the insured vehicles, are given in Appendix A. The data analysis methods used in the preparation of this report are detailed in Appendix B. Definitions are given in Appendix C, and Appendix D-1 and D-2 contain a complete list of the vehicles covered by this report. The data used were supplied by 12 insurers: Aetna, Allstate, Fireman's Fund, GEICO, Kemper, Liberty Mutual, Nationwide, Prudential, Safeco, State Farm, Travelers, and USAA.

This report is based on injury coverages and injury claims involving 1987 through 1989 model year vehicles in the period from their introduction through March 1990. It does not include the results for vehicles discontinued prior to the 1989 model year.

Results and Discussion

This report presents injury claim frequency results for 1987 to 1989 model year vehicles. Results are presented in two sections: The first summarizes the results for passenger vehicles and the second for vans, pickups, and utility vehicles. The frequency of all injury claims and the frequencies of claims with medical payments exceeding $250, $500, and $1,000 are shown for those vehicles with sufficient exposure.* Each claim frequency result, whether for passenger cars, vans, pickups, or utility vehicles, is presented in relative terms, with 100 representing the claim frequency for *all passenger cars* combined in each claim size category.

The results shown in this report were standardized to reduce the effects due to differences in the mix of operator age group among different vehicles. Standardizing for this nonvehicle factor ensures that its mix is the same for each result. It should be noted that other nonvehicle factors could vary among different vehicles and that any effects resulting from such factors have not necessarily been accounted for in the results presented in this report. The standardization procedure is described in detail in Appendix B.

The relative injury claims experience of particular vehicles does not change substantially from model year to model year providing that the basic design of the vehicle and its principal safety features remain essentially unchanged. HLDI has published the results of a statistical analysis *(HLDI Report A-26)* that demonstrated that the injury results of individual model year vehicles were generally consistent across model years when the basic vehicle designs remained the same. Because of the general consistency of injury results from model year to model year and because substantial amounts of exposure are needed to produce reliable injury claim frequency results, the data for model years 1987 through 1989 were combined for those vehicles with basic designs that remained unchanged. Vehicle series that were discontinued prior to 1989 (e.g., Chevrolet Monte Carlo and Volkswagen Scirocco in 1988) are not included. Vehicle series that were redesigned (e.g., Ford Thunderbird) or newly introduced (e.g., Ford Probe and Plymouth Acclaim) in 1989 are included. For each vehicle series and each vehicle subgroup, a separate relative claim frequency was calculated for each model year. The overall result for each vehicle series was then obtained by weighting these relative claim frequencies by the applicable exposure for each model year. (For additional explanation of this procedure, see Appendix B.)

* The exposure thresholds for reporting results were 5,000 insured vehicle years for all claims; 10,000 years for claims greater than $250; 15,000 years for claims greater than $500; and 25,000 years for claims greater than $1,000.

Beginning with the 1987 model year, the federal government required automobile manufacturers to install automatic restraint systems for front seat occupants--either automatic belts or air bags--in 10 percent of their passenger cars. The percentage of each manufacturer's vehicles required to meet the regulation (49 CFR Sec. 571.208) increased for successive model years to 100 percent for 1990 model year cars.

Because automatic restraint systems are important safety feature changes, the injury results for vehicle series during their transition from manual to automatic restraint systems were separately computed, and this report presents manual-only or automatic-only injury results for these vehicles, based on exposure considerations. All models equipped with automatic restraint systems, either automatic belts or air bags, that had adequate exposure are reported. For example, although the Cadillac DeVille was equipped with optional air bags in 1989, the air bag models had insufficient exposure to be included in this report and the results given are for models with manual belt systems and may not be good indicators of the results for the same cars with air bags. Last year's report *(HLDI Report I88-1)* included 19 cars with nonmotorized automatic belt systems, 8 with motorized automatic belt systems, and 4 with driver side air bags. This report reflects the increase in the availability of front-seat automatic restraint systems and includes results for 25 cars with nonmotorized automatic belt systems, 24 with motorized automatic belt systems, and 12 with air bags. All of these models are specifically identified in the detailed results that follow.

Passenger Cars

The total exposure accumulated by passenger vehicles of the three model years included in this report was nearly 9,000,000 insured vehicle years. Table 1 presents the claim frequencies by claim size for each model year. Claim frequencies decreased rapidly with each successively larger medical cost group. The frequency of claims exceeding $250 was less than two-thirds the overall claim frequency, the frequency of claims exceeding $500 was about one-half the overall frequency, and the frequency of claims greater than $1,000 was approximately one-third the overall frequency.

The total amount of money paid out, however, was dramatically influenced by the larger claims. For example, in 1989, claims exceeding $1,000, although representing only 34 percent of all claims, accounted for almost 90 percent of the total dollars for medical payments. Claims exceeding $500 accounted for 95 percent of the total dollars, and claims over $250 accounted for more than 98 percent of the total dollars.

Injury results for cars identified in the following tables with special symbols are for models equipped with automatic restraints. Cars identified with a ★ are equipped with air bags. Cars identified with a ● are equipped with automatic shoulder belts that are moved by a motor along guide rails above the door; the belts position themselves around occupants when the door is closed and the ignition is turned on. Cars identified with a ■ are equipped with automatic belts that are not motorized; they are attached to the door and

Table 1
Personal Injury Protection Coverages -- Claim Frequencies
By Model Year and Size of Claim

Model Year	Total Exposure (Insured Vehicle Years)	Claim Frequencies Per 1,000 Insured Vehicle Years			
		All Claims	>$250	>$500	>$1,000
1989	1,601,172	20.2	12.6	9.7	6.9
1988	3,082,722	20.8	13.5	10.6	7.7
1987	4,175,914	20.0	13.1	10.2	7.4

wrap around occupants when the car door is closed. All 1990 models, except passenger vans, have automatic restraints.

Table 2 summarizes the individual vehicle series with the lowest overall injury claim frequencies listed in increasing order of their overall relative claim frequency. The table includes all vehicle series with at least one claim frequency result that is less than one-half the all-car result, i.e., a relative claim frequency of 49 or less for any of the four claim-size categories. Claim frequency values of less than half of the all-car average are listed in bold print.

Of the 15 vehicles listed in Table 2, 9 are large vehicles, 5 are midsize, and 1 is small. Nine of these vehicle series are manufactured in the United States and the other six in Europe.

Five of the six cars with the lowest overall injury claim frequencies are equipped with either driver only or full front seat air bags. However, the exposure for most of these series was insufficient to compute results for the more expensive medical losses, where air bags are expected to be most effective. The Volvo 740/760 station wagon had the lowest overall relative claim frequency (40). Four other models, the Lincoln Continental, Mercedes-Benz SEL/SDL series, Oldsmobile Custom Cruiser, and BMW 735i, also had overall injury claim frequencies that are less than half the all-car average.

Table 3 lists the individual vehicle series with the highest overall injury claim frequencies in decreasing order of their overall relative claim frequency. This table includes all vehicle series with at least one claim frequency result that is more than 50 percent higher than the all-car result, i.e., a relative claim frequency of 151 or more for any of the four claim-size categories. Claim frequency values that exceed the all-car average by more than 50 percent are shown in bold print.

All of the 20 vehicles listed in Table 3 are small cars. Both the two-door and four-door versions of the Chevrolet Spectrum, Chevrolet Sprint, Hyundai Excel, Isuzu I-Mark, Nissan Sentra, and Pontiac LeMans were among the cars with the worst injury losses. Eighteen of the 20 vehicles with the worst results in Table 3 are imported designs: 12 from Japan, 5 from Korea, and 1 from Yugoslavia.

Table 2
1987-89 Passenger Cars With the Lowest Overall Injury Claim Frequencies -- Personal Injury Protection Coverages

Make & Series	Exposure (Insured Vehicle Years)	Relative Claim Frequencies by Size of Claim			
		All	>$250	>$500	>$1,000
★ Volvo 740/760 - S.W.	5,519	**40**			
★ Lincoln Continental	7,487	**46**			
★ Mercedes-Benz SEL/SDL Series	24,508	**48**	**46**	50	
Oldsmobile Custom Cruiser	12,952	**49**	**46**		
★ BMW 735i	6,225	**49**			
★ Mercedes-Benz 560SL Conv.	11,788	50	50		
Mercury Grand Marquis - S.W.	10,089	52	**46**		
Buick Electra - S.W.	5,537	52			
Cadillac Seville	16,049	52	57	55	
Saab 9000	14,045	53	**48**		
Volvo 240 - S.W.	19,915	55	**46**	**40**	
Chevrolet Caprice - S.W.	26,764	55	50	**48**	**48**
Pontiac Safari - S.W.	8,742	56			
Plymouth Grand Voyager	43,803	57	50	**45**	**47**
Ford Crown Victoria - 4 Dr.	80,444	57	55	51	51

★ Models equipped with air bags.
Results listed in **bold type** highlight the lowest injury claim frequencies (i.e., results that are more than 50 percent lower than the corresponding all-car result). Blanks indicate insufficient exposure.

Table 3
1987-89 Passenger Cars With the Highest Overall Injury Claim Frequencies – Personal Injury Protection Coverages

Make & Series	Exposure (Insured Vehicle Years)	Relative Claim Frequencies By Size of Claim			
		All	>$250	>$500	>$1,000
Chevrolet Spectrum - 4Dr.	43,372	**185**	**194**	**197**	**196**
■ Hyundai Excel - 4 Dr.	44,816	**174**	**182**	**189**	**195**
Isuzu I-Mark - 4 Dr.	13,476	**173**	**180**		
Chevrolet Sprint - 2 Dr.	23,490	**173**	**177**	**176**	
Pontiac LeMans - 2 Dr.	19,631	**165**	**161**	**162**	
Isuzu I-Mark - 2 Dr.	6,090	**160**			
Hyundai Excel - 2 Dr.	87,598	**157**	**163**	**166**	**171**
Chevrolet Spectrum - 2 Dr.	21,857	**157**	**163**	**155**	
● Subaru XT Coupe	7,929	**157**			
Chevrolet Sprint - 4 Dr.	15,123	**156**	**159**	**155**	
Nissan Sentra - 4 Dr.	91,525	**154**	**159**	**161**	**161**
Ford Festiva	36,418	**154**	**158**	**153**	**161**
Pontiac LeMans - 4 Dr.	16,425	**153**	**165**	**164**	
★ Dodge Daytona	20,513	**151**	142	144	
Nissan Sentra - 2 Dr.	204,713	150	**156**	**155**	**154**
Subaru Justy	14,803	150	**153**		
● Ford Escort - 2 Dr.	56,009	147	146	150	149
Nissan Pulsar	50,878	144	150	**151**	150
Yugo	28,409	144	148	148	144
■ Honda Civic CRX	6,735	144			

★ Models equipped with air bags.
● Models equipped with motorized automatic belt systems.
■ Models equipped with nonmotorized automatic belt systems.

Results listed in **bold type** highlight the highest injury claim frequencies (i.e., results that are more than 50 percent higher than the corresponding all-car result). Blanks indicate insufficient exposure.

The four-door Chevrolet Spectrum had the highest overall relative claim frequency (185) and also the highest relative frequency of claims exceeding $250, $500, and $1,000.

The only air bag equipped car listed in Table 3 is the Dodge Daytona. It is interesting to note that, unlike most of the other models in Table 3, the relative results for the Daytona for the more expensive medical claims for which there was sufficient exposure are somewhat lower than the all-claim result.

Table 4 presents relative injury claim frequency results for all of the 1987 through 1989 models with sufficient exposure. Results are shown for individual series and for each car size and body style group. The individual series results in Table 4 are listed within each group in ascending sequence of their overall relative claim frequencies.

The results in Table 4 indicate that, as a group, cars with smaller wheelbases had higher injury losses than cars with larger wheelbases. For example, large four-door models had relative claim frequencies of 65 or less for the four claim-size categories, whereas small four-door models had relative claim frequencies of 131 or more. However, this size relationship does not hold for every vehicle series because of considerable variation within size groups. The Mercedes-Benz 560SL and Porsche 944 Coupe, for example, had particularly good injury results, even though they are small cars.

Table 4 also shows that there were large differences in the loss experience of cars within the same car size and body style categories. For example, among small four-door models the highest relative claim frequency of 185 for the Chevrolet Spectrum was more than double the lowest result of 84 for the Saab 900.

(Text continues on page 12.)

Table 4
Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Passenger Cars

Model Years		Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
87-89		**All**	**All**	**8,859,808**	**100**	**100**	**100**	**100**
			SMALL CARS					
Two-Door Models				**1,247,776**	**133**	**135**	**134**	**135**
87-89		Volkswagen	GTI	8,242	95			
87-89		Honda	Civic	64,753	96	95	93	95
87-89	■	Volkswagen	Golf	5,355	100			
87-89	●	Saab	900 Turbo,S	7,425	101			
87-89		Acura	Integra	49,152	101	94	91	95
87-89		Subaru	GL 4WD	5,872	104			
87-89		Mazda	MX-6	37,307	107	115	116	112
89	●	Nissan	240SX	11,758	109	108		
87-89		Mazda	323	27,943	112	108	106	106
87-89	●	Plymouth	Conquest	12,043	112	120		
89	●	Dodge	Colt	5,466	112			
89		Ford	Probe	38,497	117	123	123	123
87-89		Toyota	Celica	84,367	120	122	122	125
87-89		Mercury	Tracer	16,566	124	125	121	
87-89		Volkswagen	Fox	15,759	124	122	116	
87-89		Subaru	DL/GL	6,720	129			
87-89	●	Mitsubishi	Starion	6,148	131			
87-89		Toyota	Tercel	90,030	132	133	131	129
87-89		Toyota	Corolla	28,016	136	143	145	133
88-89	●	Plymouth	Sundance	6,465	139			
88-89	●	Dodge	Shadow	5,975	141			
87-89		Nissan	Pulsar	50,878	144	150	151	150
87-89		Yugo	Yugo	28,409	144	148	148	144
88-89	●	Ford	Escort	56,009	147	147	150	149
87-89		Nissan	Sentra	204,713	150	156	155	154
87-89		Subaru	Justy	14,803	150	153		
88-89	★	Dodge	Daytona	20,513	151	142	144	
88-89		Ford	Festiva	36,418	154	158	153	161
87-89		Chevrolet	Spectrum	21,857	157	163	155	
87-89	●	Subaru	XT Coupe	7,929	157			
87-89		Hyundai	Excel	87,598	157	163	166	171
87-89		Isuzu	I-Mark	6,090	160			
88-89		Pontiac	Lemans	19,631	165	161	162	
87-89		Chevrolet	Sprint	23,490	173	177	176	

Table 4 (Cont'd)

Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Passenger Cars

Model Years	Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
			SMALL CARS (Cont'd)				
Four-Door Models			**1,203,864**	**131**	**132**	**133**	**134**
87-89	Saab	900	14,427	84	76		
87-89	Acura	Integra	21,743	97	92		
87-89	Subaru	GL 4WD	8,519	102			
87-89	Toyota	Tercel	6,610	104			
87-89	■ Volkswagen	Golf	7,831	106			
87-89	Honda	Civic	135,566	112	112	112	111
88-89	● Plymouth	Sundance	5,160	112			
87-89	Dodge	Omni	86,463	113	110	103	100
87-89	Plymouth	Horizon	104,996	113	109	105	104
87-89	Dodge	Shadow	39,370	114	111	106	108
87-89	Mazda	323	62,452	116	114	116	119
87-89	Toyota	Corolla	123,805	120	124	127	130
87-89	Volkswagen	Fox	21,919	125	126	128	
87-89	■ Volkswagen	Jetta	25,514	127	131	141	144
87-89	Subaru	DL/GL	26,171	134	137	143	144
88-89	● Ford	Escort	26,241	134	133	138	131
87-89	Mercury	Tracer	14,273	135	133		
88-89	Pontiac	Lemans	16,425	153	165	164	
87-89	Nissan	Sentra	91,525	154	159	161	161
87-89	Chevrolet	Sprint	15,123	156	159	155	
87-89	Isuzu	I-Mark	13,476	173	180		
87-89	■ Hyundai	Excel	44,816	174	182	189	195
87-89	Chevrolet	Spectrum	43,372	185	194	197	196
Station Wagons/Passenger Vans			**171,790**	**88**	**83**	**83**	**81**
87-89	Honda	Civic 4WD	5,272	74			
87-89	Subaru	DL/GL 4WD	48,670	78	68	67	64
87-89	Mazda	323	6,914	80			
87-89	Honda	Civic	14,169	85	82		
87-89	Subaru	DL/GL	23,624	86	82	84	
87-89	Volkswagen	Fox	7,785	94			
88-89	Toyota	Corolla	6,737	98			
87-89	Nissan	Sentra	14,437	103	93		
88-89	● Ford	Escort	8,440	104			
87-89	Toyota	Van	8,160	108			
87-89	Mitsubishi	Wagon	5,921	109			
Sports & Specialty Models			**204,483**	**95**	**98**	**98**	**99**
87-89	★ Mercedes	560SL Conv	11,788	50	50		
87-89	Porsche	944 Coupe	8,899	61			

Table 4 (Cont'd)
Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Passenger Cars

Model Years	Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
		SMALL CARS (Cont'd)					
87-89	Chevrolet	Corvette	19,894	73	75	79	
87-89	Chevrolet	Corvette Conv	8,476	73			
87-89	Toyota	Celica Conv	5,876	85			
87-89	Nissan	300ZX 2+2	8,271	91			
87-89	Nissan	300ZX	20,160	96	97	94	
87-89	Volkswagen	Cabriolet	13,263	107	109		
87-89	Toyota	MR2	14,572	127	135		
89	■ Honda	Civic CRX	6,735	144			
		MIDSIZE CARS					
Two-Door Models			**783,958**	**111**	**110**	**109**	**107**
87-89	Merkur	XR4Ti	5,567	67			
87-89	Plymouth	Reliant	9,645	86			
88-89	■ Oldsmobile	Cutlass Supreme	37,871	86	85	84	80
88-89	■ Buick	Regal	53,149	87	85	84	87
88-89	■ Pontiac	Grand Prix	44,596	88	91	88	87
87-89	■ Honda	Accord	73,059	93	91	88	89
88-89	■ Honda	Prelude	45,160	94	91	90	92
87-89	Oldsmobile	Cutlass Ciera	26,094	95	94	90	89
87-89	Dodge	Aries	7,513	102			
88-89	★ Chrysler	LeBaron	10,360	109	99		
87-89	■ Buick	Somerset/Skylark	16,772	110	108	106	
87-89	■ Oldsmobile	Calais	48,256	110	112	115	118
88-89	● Ford	Tempo	16,426	111	118	120	
87-89	■ Pontiac	Grand Am	114,124	113	116	118	116
88-89	■ Chevrolet	Beretta	53,336	129	128	130	126
87-89	Buick	Skyhawk	18,485	130	125	129	
87-89	Pontiac	Sunbird	52,474	138	136	136	129
87-89	Chevrolet	Cavalier	142,253	138	137	134	128
Four-Door Models			**2,365,044**	**94**	**94**	**94**	**94**
88-89	Dodge	Dynasty	26,342	69	72	73	68
88-89	Chrysler	New Yorker	35,966	71	76	79	79
88-89	Mazda	929	16,769	78	83	90	
89	Plymouth	Acclaim	8,875	78	89		
87-89	Mercury	Sable	77,655	82	81	82	76
87-89	Ford	Taurus	216,365	82	84	84	85
87-89	Chrysler	LeBaron	25,860	83	77	75	78
87-89	Buick	Century	117,837	83	82	83	78
89	Dodge	Spirit	6,705	86			
87-89	Oldsmobile	Cutlass Ciera	193,780	88	86	87	87

Table 4 (Cont'd)

Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Passenger Cars

Model Years		Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
			MIDSIZE CARS (Cont'd)					
87-89	●	Toyota	Camry	206,197	88	90	92	94
87-89		Honda	Accord	343,360	89	87	87	88
88-89	●	Ford	Tempo 4WD	6,080	89			
89	●	Eagle	Premier	5,599	89			
87-89		Volvo	240	39,470	89	96	101	107
87-89		Pontiac	6000	70,698	90	87	84	80
87-89		Chevrolet	Celebrity	153,690	91	88	86	83
87-89	●	Toyota	Cressida	25,665	95	96	106	112
87-89	●	Mazda	626	50,746	96	93	96	97
89	■	Chevrolet	Corsica	23,896	99	95	95	
87-89		Dodge	Lancer	15,954	100	94	89	
87-89		Plymouth	Reliant	71,125	102	95	93	92
87-89		Dodge	Aries	61,902	102	101	97	93
87-89	●	Nissan	Maxima	93,640	106	111	112	118
87-89		Mitsubishi	Sigma/Galant	14,387	106	111		
87-89	■	Oldsmobile	Calais	31,332	107	113	120	128
87-89	■	Buick	Skylark	20,210	108	110	107	
87-89	■	Pontiac	Grand Am	49,452	110	109	109	105
88-89	●	Ford	Tempo	81,977	111	112	112	112
87-89		Nissan	Stanza	72,703	113	114	116	114
88-89	●	Mercury	Topaz	29,169	115	109	106	107
87-89		Buick	Skyhawk	13,242	115	116		
89		Mitsubishi	Galant	9,758	118			
87-89		Pontiac	Sunbird	22,991	124	118	120	
87-89		Chevrolet	Cavalier	91,329	125	122	122	122
Station Wagons/Passenger Vans				**320,221**	**75**	**69**	**68**	**66**
87-89		Volvo	240	19,915	55	46	40	
87-89		Mercury	Sable	27,264	64	57	55	51
87-89	●	Toyota	Camry	28,720	65	59	59	55
87-89		Ford	Taurus	93,141	67	64	63	63
87-89		Buick	Century	13,365	69	59		
87-89		Oldsmobile	Cutlass Ciera	21,666	69	63	61	
87-89		Pontiac	6000	9,078	69			
87-89		Dodge	Colt Vista 4WD	5,570	75			
87-89		Chevrolet	Celebrity	43,050	79	74	71	69
87-89		Chevrolet	Cavalier	30,275	105	100	101	102
87-89		Dodge	Colt Vista	11,563	110	101		
87-89		Plymouth	Colt Vista	9,080	117			

Table 4 (Cont'd)
Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Passenger Cars

Model Years		Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
			MIDSIZE CARS (Cont'd)					
Sports & Specialty Models				**759,953**	**98**	**98**	**100**	**100**
87-89	★	Volvo	740/760 SW	5,519	40			
89	★	Lincoln	Continental	7,487	46			
87-89		Cadillac	Seville	16,049	52	57	55	
87-89		Saab	9000	14,045	53	48		
88-89	★	Acura	Legend 4D	8,959	62			
87-89		BMW	325i Conv	10,570	67	72		
87-89		Lincoln	Mark VII	30,295	67	71	73	80
87-89	★	Volvo	740/760 4D	13,837	68	69		
87-89		Cadillac	Eldorado	24,443	70	66	69	
87-89		Rover	Sterling 825/827	9,773	72			
87-89		Oldsmobile	Toronado	12,631	73	77		
87-89		Toyota	Supra	31,812	82	81	82	83
87-89		Buick	Riviera	12,186	85	88		
87-89		BMW	300 Series 4D	17,683	90	84	91	
87-89		BMW	300 Series 2D	26,550	91	90	94	97
87-89	★	Mercedes	190D/E	20,782	94	97	103	
87-89		Ford	Mustang Conv	28,316	96	98	102	103
88-89	★	Chrysler	LeBaron Conv	11,064	98	106		
87-89		Chevrolet	Cavalier Conv	6,767	105			
87-89		Pontiac	Firebird	76,603	110	111	113	116
87-89		Ford	Mustang	156,869	127	129	128	127
87-89		Chevrolet	Camaro	113,420	127	133	135	131
			LARGE CARS					
Two-Door Models				**50,356**	**78**	**76**	**77**	**80**
89	●	Ford	Thunderbird	12,999	67	68		
87-89	■	Oldsmobile	Eighty-Eight	10,112	74	75		
89	●	Mercury	Cougar	13,973	81	76		
87-89	■	Buick	LeSabre	13,272	86	85		
Four-Door Models				**611,101**	**65**	**65**	**64**	**64**
87-89		Ford	Crown Victoria	80,444	57	55	51	51
87-89		Chevrolet	Caprice	104,639	60	59	59	57
89	■	Oldsmobile	Ninety-Eight	10,373	61	67		
87-89		Mercury	Grand Marquis	132,403	63	66	66	67
87-89	■	Pontiac	Bonneville	75,732	63	63	64	64
87-89	■	Buick	LeSabre	84,238	67	65	64	65

Table 4 (Cont'd)

Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Passenger Cars

Model Years	Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
		LARGE CARS (Cont'd)					
89	■ Buick	Electra	10,533	72	77		
87-89	■ Oldsmobile	Eighty-Eight	107,854	78	77	76	75
Station Wagons/Passenger Vans			**724,608**	**65**	**62**	**60**	**60**
87-89	Oldsmobile	Custom Cruiser	12,952	49	46		
87-89	Buick	Electra	5,537	52			
87-89	Mercury	Grand Marquis	10,089	52	46		
87-89	Chevrolet	Caprice	26,764	55	50	48	48
87-89	Pontiac	Safari Wagon	8,742	56			
88-89	Plymouth	Grand Voyager	43,803	57	50	45	47
88-89	Dodge	Grand Caravan	44,446	58	53	51	54
87-89	Ford	Crown Victoria	14,207	60	52		
87-89	GMC	Safari Van	21,304	60	59		
87-89	Dodge	Caravan	130,278	63	61	60	58
89	Mazda	Wagon	6,201	64			
87-89	Plymouth	Voyager	134,731	66	59	55	54
87-89	Chevrolet	Astro Van	95,401	69	66	65	66
87-89	Ford	Aerostar	158,243	73	74	74	77
89	Ford	Extended Aerostar	6,227	75			
Sports & Specialty Models			**416,652**	**63**	**67**	**70**	**71**
87-89	★ Mercedes	SEL/SDL Series	24,508	48	46	50	
88-89	★ BMW	735i	6,225	49			
87-89	Lincoln	Town Car	128,424	62	67	69	69
87-89	Cadillac	Fleetwood/DeVille 4D	126,731	65	69	73	75
87-89	Cadillac	Brougham	52,984	66	69	76	77
87-89	★ Mercedes	260E/300D/E	32,720	67	70	74	76
87-89	Cadillac	DeVille 2D	33,140	75	83	88	90

★ Models equipped with air bags.
● Models equipped with motorized automatic belt systems.
■ Models equipped with nonmotorized automatic belt systems.

Results are Standardized to the Distribution:

Youthful Operator	No Youthful Operator
10%	90%

Minimum Exposure Requirements for Reporting:

All claims	-	5,000 Vehicle Years
Claims > $250	-	10,000 Vehicle Years
Claims > $500	-	15,000 Vehicle Years
Claims >$1000	-	25,000 Vehicle Years

Vans, Pickups, and Utility Vehicles

This section presents injury claim frequency results for 1987 through 1989 model year vans, pickups, and utility vehicles. The results for pickups are presented for small and standard pickups. Small pickups are defined as those with curb weight of less than 3,500 pounds. The utility vehicle results are divided into three wheelbase size groups: Small utility vehicles are those with wheelbases less than 100 inches; intermediate utility vehicles are those with wheelbases in the range 100 to 120 inches; and large utility vehicles are those with wheelbases exceeding 120 inches.

The results for vans, pickups, and utility vehicles are presented in relative terms with the value 100 corresponding to the result for *all passenger cars* combined in each claim size category. Thus, the value 61 for the overall relative claim frequency of all 1987 through 1989 model year vans indicates a claim frequency result that was 39 percent better than the result for all 1987 through 1989 model year passenger cars.

The total exposure for vans, pickups, and utility vehicles represented in the three model years included in this report was approximately 2.8 million insured vehicle years. Figure 1 displays the results by size of claim for each of the six vehicle groups. For pickups and utility vehicles, there was a strong relationship between vehicle size and injury claim frequencies; the larger vehicles tended to have lower claim frequencies. As a group, the best claim frequency results were for large utility vehicles. (This group is comprised solely of Chevrolet Suburban and GMC Suburban models.) Small pickups and small utility vehicles had the highest claim frequency results.

Table 5 summarizes the individual vans, pickups, and utility vehicles with the lowest injury claim frequencies listed in increasing order of their overall relative claim frequency. It contains three utility vehicles and one standard-size pickup. These vehicles had overall injury claim frequencies that were approximately 40 percent of the *all-passenger-car* frequency.

Figure 1
1987-89 Model Year Vans, Pickups, and Utility Vehicles -- Relative Claim Frequencies -- Personal Injury Protection Coverages

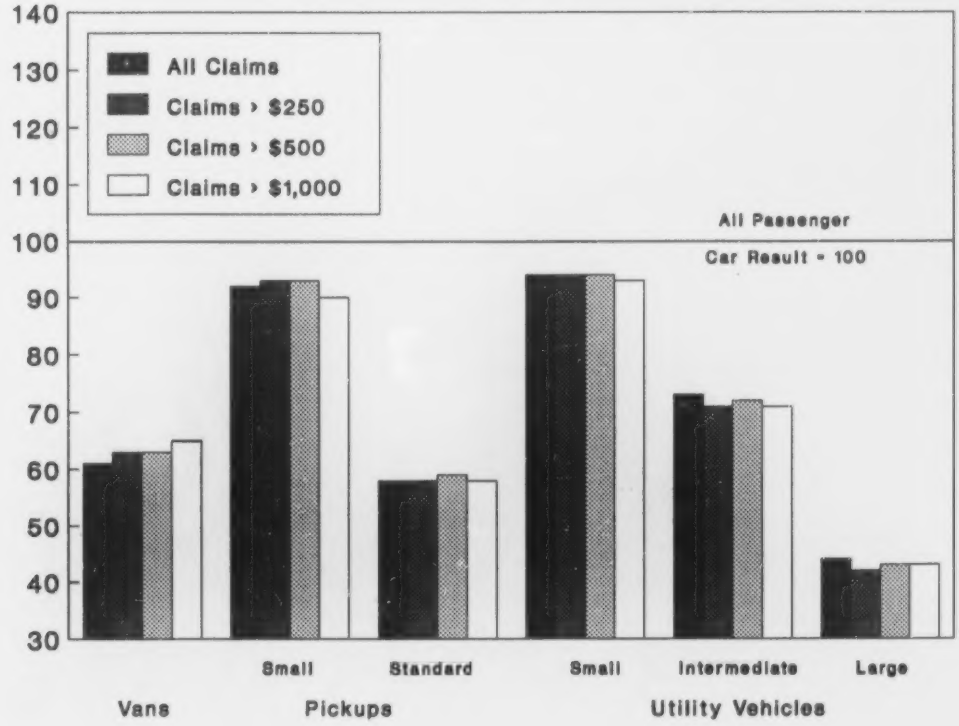

Table 6 lists the vans, pickups, and utility vehicles with the highest injury claim frequencies. All of the listed vehicles -- three small pickups and one small utility vehicle -- are Japanese imports. Topping the list was the Toyota Standard Bed pickup with an overall injury claim frequency that exceeded the all-car result by 40 percent.

Table 7 presents relative injury claim frequency results for all of the 1987 through 1989 model year vans, pickups, and utility vehicles with sufficient exposure. Results are shown for individual series and for each vehicle group. Within each vehicle group, the individual series are listed in ascending sequence of their overall relative claim frequencies.

Table 5
1987-89 Vans, Pickups, and Utility Vehicles With the Lowest Overall Injury Claim Frequencies -- Personal Injury Protection Coverages

Make and Series	Exposure (Insured Vehicle Years)	Relative Claim Frequencies by Size of Claim			
		All	>$250	>$500	>$1,000
GMC Suburban (1/2T) 4X4	5,595	34			
GMC Suburban (1/2T)	11,118	39	41		
Ford F-250 Super Cab	10,819	41	41		
Toyota Land Cruiser	5,507	42			

Table 6
1987-89 Vans, Pickups, and Utility Vehicles With the Highest Overall Injury Claim Frequencies -- Personal Injury Protection Coverages

Make and Series	Exposure (Insured Vehicle Years)	Relative Claim Frequencies by Size of Claim			
		All	>$250	>$500	>$1,000
Toyota Standard Bed	6,024	140			
Mitsubishi Standard Bed	22,408	129	142	148	
Toyota Standard Bed 4X4	5,900	123			
Suzuki Samurai 4X4	54,857	121	127	126	120

Table 7
Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Vans, Pickups, Utility Vehicles

Model Years	Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
			VANS				
All Vans			**320,014**	**61**	**63**	**63**	**65**
87-89	Ford	E-150 Club Wagon (1/2-3/4T)	9,421	43			
87-89	Ford	E-150 Econoline (1/2-3/4T)	76,189	53	53	52	57
87-89	Chevrolet	Chevy Van (3/4T)	58,339	53	54	54	58
87-89	GMC	Vandura (3/4T)	16,283	53	51	47	
87-89	Dodge	B250 Cargo Van	33,950	55	56	60	63
87-89	Ford	E-250 Econoline (3/4T)	7,959	56			
87-89	Dodge	B250 (3/4T)	6,716	56			
87-89	Dodge	B150 Cargo Van	13,865	60	63		
87-89	Chevrolet	Chevy Van (1/2T)	6,607	60			
87-89	Dodge	B150 (1/2T)	5,937	61			
87-89	Dodge	Cargo Minivan	6,423	68			
87-89	GMC	Safari Cargo Van	7,166	74			
87-89	Ford	Aerostar Cargo Van	8,713	77			
87-89	Chevrolet	Astro Cargo Van	35,188	80	86	88	87
87-89	Toyota	Cargo Van	12,653	99	110		
			PICKUPS				
Small Pickups			**923,491**	**92**	**93**	**93**	**90**
87-89	Dodge	Dakota (1/2T) 4x4	22,484	68	56	51	
87-89	Chevrolet	T10 4x4	23,238	70	67	65	
87-89	Dodge	Dakota (1/2T)	70,659	70	67	66	61
87-89	Chevrolet	T10 Extended Cab 4x4	6,707	71			
87-89	Mazda	B Series Long Bed	12,032	75	69		
87-89	Ford	Ranger Super Cab	53,566	75	73	73	72
87-89	Jeep	Comanche	20,734	76	73	72	
87-89	Nissan	King Cab 4x4	10,547	78	78		
87-89	Dodge	Ram50 Long Bed	11,218	79	84		
87-89	Ford	Ranger Super Cab 4x4	28,558	79	74	74	76
87-89	Jeep	Comanche 4x4	6,990	79			
87-89	Chevrolet	S10 Extended Cab	7,375	80			
87-89	Mazda	B Series Cab Plus	34,081	85	85	85	83
87-89	GMC	T15 4x4	5,384	88			
87-89	Dodge	Ram50 4x4	6,844	89			
87-89	Nissan	King Cab	18,173	90	99	98	
87-89	Ford	Ranger 4x4	30,429	91	90	85	77

Table 7 (Cont'd)

Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Vans, Pickups, Utility Vehicles

Model Years	Make	Series	Exposure	Size of Claim			
				All	>$250	>$500	>$1,000
		PICKUPS (Cont'd)					
87-89	Mazda	B Series Standard Bed 4x4	6,913	95			
87-89	Nissan	Standard Bed 4x4	9,279	96			
87-89	GMC	S15	25,682	96	95	94	90
87-89	Mazda	B Series Standard Bed	70,747	97	101	105	101
87-89	Ford	Ranger	135,396	97	101	101	98
87-89	Chevrolet	S10	121,143	102	104	101	94
87-89	Dodge	Ram50	26,523	105	109	108	103
88-89	Isuzu	Standard Bed	8,843	107			
87-89	Nissan	Standard Bed	67,527	112	117	121	116
89	Toyota	Standard Bed 4x4	5,900	123			
87-89	Mitsubishi	Standard Bed	22,408	129	142	148	
89	Toyota	Standard Bed	6,024	140			
Standard Pickups			**610,507**	**58**	**58**	**59**	**58**
87-89	Ford	F-250 Super Cab	10,819	41	41		
87-89	Ford	F-250 (3/4T)	20,421	43	47	50	
87-89	Ford	F-150 Super Cab 4x4	8,617	44			
87-89	Ford	F-150 Super Cab	41,384	44	48	48	53
88-89	Chevrolet	1500 Series (1/2T) 4x4	36,514	47	45	46	43
88-89	Chevrolet	2500 Series (3/4T) 4x4	11,996	50	50		
87-89	Ford	F-250 (3/4T) 4x4	26,881	50	49	43	43
87-89	Ford	F-250 Super Cab 4x4	8,851	51			
87-89	Ford	F-150 (1/2-3/4T) 4x4	63,775	52	49	48	45
88-89	GMC	1500 Series (1/2T) 4x4	9,597	56			
88-89	Chevrolet	2500 Series (3/4T)	9,073	57			
87-89	Ford	F-150 (1/2-3/4T)	136,769	60	62	64	64
88-89	GMC	1500 Series (1/2T)	25,411	60	68	69	66
88-89	Chevrolet	10 Extended Cab (1/2T)	13,787	61	63		
87-89	Dodge	W150 (1/2T) 4x4	13,123	63	59		
88-89	Chevrolet	1500 Series (1/2T)	94,583	66	69	71	69
87-89	Dodge	D150 (1/2T)	41,665	67	67	68	70
87-89	Toyota	4Runner	19,786	94	98	108	
		UTILITY VEHICLES					
Small Utility Vehicles			**284,270**	**94**	**94**	**94**	**93**
87-89	Dodge	Raider	16,650	79	71	64	
87-89	Jeep	Wrangler	49,898	81	77	76	71
87-89	Ford	Bronco II 4x4	92,544	81	77	76	74
87-89	Mitsubishi	Montero 2D 4x4	12,244	85	80		
87-89	Ford	Bronco II	40,945	99	107	112	119

Table 7 (Cont'd)

Relative Claim Frequency by Size of Claim
Personal Injury Protection Coverages -- 1987-89 Vans, Pickups, Utility Vehicles

Model Years	Make	Series	Exposure	Size of Claim All	>$250	>$500	>$1,000
		UTILITY VEHICLES (Cont'd)					
87-89	Suzuki	Samurai Van 4x4	11,660	114	121		
87-89	Suzuki	Samurai 4x4	54,857	121	127	126	120
Intermediate Utility Vehicles			**581,840**	**73**	**71**	**72**	**71**
87-89	Toyota	Land Cruiser	5,507	42			
87-89	Dodge	Ramcharger	14,043	45	51		
87-89	Jeep	Grand Wagoneer	13,414	51	53		
87-89	Ford	Bronco	47,938	52	53	54	55
87-89	Jeep	Wagoneer	11,402	58	56		
87-89	Chevrolet	K10 Blazer (1/2T)	25,304	58	54	55	55
87-89	Jeep	Cherokee 4x4	123,118	64	58	57	56
87-89	GMC	Jimmy (1/2T)	6,344	64			
87-89	Jeep	Cherokee	23,874	68	73	72	
87-89	Dodge	Ramcharger 4x4	12,696	71	64		
87-89	Isuzu	Trooper II 4x4	40,035	78	72	72	65
87-89	GMC	T15 Jimmy 4x4	25,773	79	77	71	72
87-89	Nissan	Pathfinder 4x4	31,186	79	74	74	84
87-89	Chevrolet	T10 Blazer 4x4	111,530	84	79	77	75
87-89	Toyota	4Runner Wagon	9,901	87			
87-89	Chevrolet	S10 Blazer	61,747	95	106	111	111
87-89	GMC	S15 Jimmy	15,069	96	109	121	
Large Utility Vehicles			**78,617**	**44**	**42**	**43**	**43**
87-89	GMC	Suburban (1/2T) 4x4	5,595	34			
87-89	GMC	Suburban (1/2T)	11,118	39	41		
87-89	Chevrolet	Suburban (3/4T)	5,045	44			
87-89	Chevrolet	Suburban (1/2T)	35,209	45	44	46	46
87-89	Chevrolet	Suburban (1/2T) 4x4	15,454	48	43	46	

Results are Standardized to the Distribution:

Youthful Operator	No Youthful Operator
10%	90%

Minimum Exposure Requirements for Reporting:

All claims	-	5,000 Vehicle Years
Claims > $250	-	10,000 Vehicle Years
Claims > $500	-	15,000 Vehicle Years
Claims >$1000	-	25,000 Vehicle Years

APPENDIX A
Specifications of Injury Coverages

Personal Injury Protection (PIP) Coverages

Personal injury protection coverages provide first-party insurance against medical and other types of losses in "no-fault" states.

The personal injury protection coverages reported in this study were based on data from the 19 states and the District of Columbia listed below.

Personal Injury Protection (PIP) Coverages States:

Colorado	Michigan
Connecticut	Minnesota
Delaware	New Jersey
District of Columbia	New York
Florida	North Dakota
Georgia	Oregon
Hawaii	Pennsylvania
Kansas	South Carolina
Kentucky	Texas
Maryland	Utah

APPENDIX B
Method of Data Analysis

Personal Injury Protection Coverages

Results in this report are based on personal injury protection (PIP) coverages that are provided in so-called no-fault states. These coverages were selected because they provide medical expense reimbursement to injured occupants of the insured vehicle.

Use of PIP insurance data to identify crashes involving injury has certain limitations because these data cannot provide information on all occupant injuries. This occurs when claims for injury costs are not made under PIP coverages because of the availability of other sources of medical expense reimbursements, such as bodily injury liability and/or health insurance coverages. Consequently, PIP claim frequencies do not include all of the crashes involving injury. This limitation should not distort comparisons among different vehicles.

Vehicle Description and Identification

The Vehicle Identification Numbers (VINs) of most new automobiles sold in the United States are individually unique numbers that contain, in coded form, detailed information as to each vehicle's make, model year, series,* and other distinguishing characteristics.

The very specific vehicle types for which results are presented in this report were derived from the VINs of the individual automobiles.

Only data with valid VINs were used for this report. Each VIN was decoded into a set of specific characteristics. For the purposes of this report the vehicle characteristics of primary concern were make, model year, series, body style, and wheelbase.

Exposure

Exposure, in terms of insured vehicle years, was computed for each individual vehicle from the coverage data. The total number of insured vehicle years for each vehicle series was then obtained by accumulating the exposure for all of the individual vehicles of that vehicle series.

For each vehicle series, the exposure was also computed for each operator age group -- youthful operators and no youthful operators.*

Claim Frequency

Both pending and paid claims for an individual vehicle were first matched with the vehicle's corresponding coverage data to ensure that the crash had occurred within an appropriate period of coverage for that vehicle. In every instance in which multiple claims were made for the same crash -- e.g., when more than one occupant of the car incurred medical expenses -- the claims were treated as a single injury claim in the calculation of claim frequencies. It should be noted that some medical expenses can sometimes be incurred even though the occupants are not injured. This can occur, for example, when precautionary medical examinations are undertaken even though no injuries are apparent or, in fact, found.

* See Appendix C for definitions.

All injury claims involving medical expense reimbursements were used, together with the corresponding exposure, to compute the claim frequencies in terms of the number of claims per 1,000 insured vehicle years. The overall claim frequency results were computed using both paid and pending claims. In addition to the overall claim frequency results, separate claim frequency results were computed for claims in which the medical losses exceeded $250, $500, and $1,000. The latter three results provide indications of the extent to which particular cars are over- or under-involved in crashes resulting in more significant injuries. Claims involving nonmedical losses only and claims settled without payments were not used. Thus, the claim frequencies represent the number of crashes per 1,000 insured vehicle years in which one or more injuries occurred resulting in medical expense claim payments under PIP insurance coverages.

Standardization

The losses for different vehicles can vary substantially in relation to certain nonvehicle factors. One important factor with which claim frequency varies is the operator age group, and the mix of operator ages can vary considerably among different vehicle types -- so considerably that it could distort comparisons of results between vehicles if not taken into account.

Youthful operators have higher insurance claim frequencies than older drivers. Thus, if two vehicle types have different proportions of youthful operators, this difference, if not taken into consideration, would be sufficient to bias comparisons. To remove this effect, the results for each vehicle type were weighted, using the values shown below, to produce a weighted average of the actual results for each operator age group. In this way the results for each vehicle type are based on the same mix, or distribution, of exposure for the two operator age groups.

Because the same weights are used for each vehicle type, the effects due to operator age group are present in equal amounts in the standardized results for each vehicle type. Therefore, to the extent that the age distributions within operator age group do not vary substantially for different vehicles, these effects can no longer bias comparisons among vehicles.

This standardization procedure is widely used in vital health statistics.* The basic principle of this standardization procedure is the introduction of a standard distribution of exposure for the different operator age groups.

OPERATOR AGE GROUP WEIGHTS

Youthful Operator	No Youthful Operator	Combined
0.1	0.9	1.0

Mathematical Procedures

This section describes, and illustrates with an example, the mathematical calculations performed in applying the standardization procedure to the injury loss information used for this report.

For a particular vehicle series (or group of vehicles), let C_i represent the total number of claims (paid and unpaid) and let E_i represent the total number of insured vehicle years of exposure, where

i = y means that the classification code assigned to the vehicle indicates youthful operator, and

i = n means that the classification code assigned to the vehicle indicates no youthful operator.

Thus, youthful and no youthful operator claim frequencies (f_y and f_n, respectively), in terms of the number of claims per 1,000 insured vehicle years, are calculated as

$$f_y = (C_y / E_y) \times 1{,}000, \text{ and } f_n = (C_n / E_n) \times 1{,}000 .$$

The above claim frequencies are then combined using the previously cited operator age group weights to obtain the standardized claim frequency (f) as follows:

$$f = (0.1)f_y + (0.9)f_n.$$

* For example, see Armitage, P., Statistical Methods in Medical Research, Wiley, New York, 1971.

Example: 1989 Ford Probe

Number of Claims by Operator Age Groups		Exposure By Operator Age Groups	
Youthful	No Youthful	Youthful	No Youthful
$C_y = 271$	$C_n = 690$	$E_y = 7{,}804.37$	$E_n = 30{,}692.16$

Thus, the youthful and no youthful operator claim frequencies are:

$$f_y = (271 / 7{,}804.37) \times 1{,}000 = 34.72,$$

and

$$f_n = (690 / 30{,}692.16) \times 1{,}000 = 22.48.$$

The standardized claim frequency is calculated as follows:

$$f = (0.1)f_y + (0.9)f_n = (0.1)(34.72) + (0.9)(22.48) = 23.71.$$

Thus, the standardized claim frequency for the 1989 Ford Probe is 23.7 claims per 1,000 insured vehicle years of exposure.

Exposure Threshold for Reporting Results

A threshold of 5,000 insured vehicle years of exposure was selected for reporting the overall claim frequency results for vehicle groups and individual vehicle series. Consequently, no results are presented in this report for any of the vehicle series with smaller amounts of exposure. In addition, different thresholds were used to determine whether the claim frequency results for medical losses exceeding the specified dollar amounts were published. In order for the claim frequency results for medical losses exceeding $250 to be published, at least 10,000 insured years of exposure were required; for medical losses of greater than $500, the minimum exposure was 15,000; and for medical losses exceeding $1,000, the minimum exposure was 25,000 insured vehicle years.

It should be kept in mind that, in general, the greater the exposure associated with a reported claim frequency, the more confidence can be placed in it.

Combining Results for More Than One Model Year

The relative injury loss experience of particular vehicles does not change substantially from model year to model year providing that the basic design of the vehicle remains essentially unchanged. For this reason and because substantial amounts of exposure are needed to provide reliable injury claim frequency results, the data for model years 1987 through 1989 were combined for those vehicles with unchanged basic designs.

The aggregated model year result (R) for each vehicle series (i) was obtained by weighting the relative claim frequency for each model year (j) by the applicable exposure for each model year; that is,

$$R_i = [\Sigma (exp_{ij} (f_{ij} / F_j)) / (\Sigma exp_{ij})] \times 100,$$

where

exp_{ij} = exposure for vehicle i for model year j,

f_{ij} = standardized claim frequency for vehicle i for model year j, and

F_j = standardized claim frequency for all passenger cars for model year j.

Example: Honda Civic 2-Door

	1989	1988	1987
Exposure (exp)	11,994	22,301	30,458
Claim Frequency (f)	23.6	19.9	17.6
Claim Frequency (F) -- all	20.2	20.8	20.0

Result = [11,994 (23.6 / 20.2) + 22,301 (19.9 / 20.8)+ 30,458 (17.6 / 20.0)] / [11,994 + 22,301 + 30,458] x 100 = 96.

APPENDIX C
Definitions

Claim Frequency -- The number of claims for a group of vehicles, divided by the exposure for that group; expressed as claims per one thousand insured vehicle years.

Exposure -- The time interval an individual vehicle is insured. Exposure for a group of vehicles is expressed in units of insured vehicle years.

First-Party Coverage -- An insurance coverage under which the policyholder collects compensation for his losses from his own insurer regardless of fault.

No-Fault Auto Insurance -- An auto insurance plan in which each driver/owner accepts financial responsibility for some or all losses sustained by himself, pedestrians hit by him, and occupants of his own vehicle in return for which he enjoys some immunity from liability for losses to third-party persons.

Operator Age Group -- The factor that distinguishes those vehicles with a youthful rated driver from those vehicles without a youthful rated driver (see Youthful Operator).

Personal Injury Protection (PIP) Coverage -- First-party no-fault coverage in which an insurer pays, within the specified limits, the medical, hospital, and other expenses of the insured, others in his vehicle, and pedestrians struck by him.

Rated Driver -- The driver who, for insurance purposes, is considered to represent the greatest loss potential for the insured vehicles.

Vehicle Classifications -- There are four vehicle classes, defined as follows:

1. **Passenger Cars** -- There are four major body style groupings of passengers cars - regular two-door models, regular four-door models, station wagons and passenger vans, and sports and specialty models. Sports and specialty models include all two-seater cars, all convertibles, all midsize and large cars with two or fewer designated rear seating positions, and all luxury cars. Each body style group is further divided into classes based on wheelbase size (rounded to the nearest inch) defined as follows:

   Small -- Cars with wheelbases less than or equal to 99 inches.
   Midsize -- Cars with wheelbases greater than 99 inches and less than or equal to 109 inches.
   Large -- Vehicles with wheelbases greater than 109 inches.

2. **Vans** -- Fully enclosed vehicles with either no hood or a very short hood, in which the engine is placed at least 50 percent behind the windshield. The driver's position is usually well forward, nearly beside the engine, usually within the forward 25 percent of the wheelbase. These vehicles are designed for cargo transport and are equipped with a right-side cargo access door and rear doors. The cargo area is not separated from the passenger area - both are enclosed under the same roof.

3. **Pickups** -- Cargo-carrying vehicles, usually on a truck chassis, with an enclosed cab and a separate open cargo area. The open cargo area generally is a box with raised sides with an opening tailgate. There are also a small number of auto pickups that are similar to regular pickups except that they are built on a passenger car chassis. Pickups are further divided into two subgroups based on curb weight - small pickups (less than 3,500 pounds) and standard pickups (3,500 pounds or more).

4. **Utility Vehicles** -- Vehicles built on a heavy-duty chassis capable of off-road use. They are of conventional construction with the driver behind the engine. The cargo and passenger areas are integral with the driver area. Many of these vehicles are equipped with soft or removable tops. Frequently, these vehicles are equipped with four-wheel drive. Utility vehicles are further divided into three subgroups based on wheel-base size - small utility vehicles (less than 100 inches), intermediate utility vehicles (from 100 to 120 inches), and large utility vehicles (greater than 120 inches).

Vehicle Identification Number (VIN) -- A code, variously comprising both numbers and letters; normally 8 to 17 characters in length, assigned to each vehicle by its manufacturer. The VIN uniquely identifies the vehicle within at least a 10-year time span and, in recent model year vehicles, almost always contains coding that identifies the make, series, model year, and other characteristics of each vehicle.

Vehicle Series -- A name denoting a family of vehicles, within a make, with the same wheelbase and a degree of commonality in construction such as body, chassis, etc.

Youthful Operator -- For the purposes of this report, all males (married or single) under 25 years of age and all unmarried females under 25 years of age.

APPENDIX D-1

1987-89 Vehicle Series Designations -- Passenger Cars

Make	Series	2-Door Model	4-Door Model	S.W./ Pass.Van	Sports/ Specialty
Acura	Integra	S	S		
	Legend 2D				M
	Legend 4D				M
Alfa Romeo	Milano		S		
	Spider Convertible				S
Aston Martin	Lagonda				L
	Saloon				L
	Vantage				M
	Volante Convertible				M
Audi	100 Quattro 4D* 4WD				M
	100 SW*				M
	100 4D*				M
	200 Quattro SW* 4WD				M
	200 Quattro 4D* 4WD				M
	200 4D*				M
	80**				M
	80 Quattro** 4WD				M
	90**				M
	90 Quattro** 4WD				M
Avanti	Avanti				M
	Avanti Convertible				M
Bentley	Continental Convertible				L
	Eight				L
	Mulsanne				L
	Turbo R*				L
Bertone	X 1/9				S
BMW	M3**				M
	300 Series 2D				M
	300 Series 4D				M
	325i Convertible				M
	325iX 2D**				M
	325iX 4D**				M
	525i/535i*				M
	635CSi				M
	735/750iL**				L
	735i**				L

Passenger Cars (Cont'd)

Make	Series	2-Door Model	4-Door Model	S.W./ Pass.Van	Sports/ Specialty
Buick	Century	M	M	M	
	Electra		L	L	
	LeSabre	L	L	L	
	Reatta**				S
	Regal**	M			
	Riviera				M
	Skyhawk	M	M	M	
	Somerset/Skylark	M	M		
Cadillac	Allante Convertible				S
	Brougham				L
	DeVille 2D				L
	Eldorado				M
	Fleetwood 2D*				L
	Fleetwood/DeVille 4D				L
	Seville				M
Chevrolet/Geo	Astro Van			L	
	Beretta	M			
	Camaro				M
	Camaro Convertible				M
	Caprice		L	L	
	Cavalier	M	M	M	
	Cavalier Convertible				M
	Celebrity		M	M	
	Corsica		M		
	Corvette				S
	Corvette Convertible				S
	Metro*	S	S		
	Prizm*		S		
	Spectrum	S	S		
	Sprint	S	S		
Chrysler	Daytona	S			
	Dynasty**		M		
	LeBaron	M	M		
	LeBaron Convertible				M
	New Yorker**		M		
	New Yorker 5th Ave		L		
	Newport		L		
Chry/Plym/Mitsubshi	Colt	S**		S*	
	Colt Vista			M	
	Colt Vista 4WD			M	
	Colt 4WD*			S	
	Conquest	S			

Passenger Cars (Cont'd)

Make	Series	2-Door Model	4-Door Model	S.W./ Pass.Van	Sports/ Specialty
Daihatsu	Charade**	S			
Dodge	Aries	M	M		
	Caravan			L	
	Daytona	S			
	Diplomat		L		
	Dynasty**		M		
	Grand Caravan**			L	
	Lancer		M		
	Omni		S		
	Shadow	S	S		
	Spirit*		M		
Dodge/Mitsubishi	Colt	S**		S*	
	Colt Vista			M	
	Colt Vista 4WD			M	
	Colt 4WD*			S	
Eagle	Medallion**		M	M	
	Premier**		M		
	Summit*		S		
Ferrari	Mondial				M
	Mondial Convertible				M
	Testarossa				M
	328 GTB/GTS				S
Ford	Aerostar			L	
	Extended Aerostar*			L	
	Crown Victoria		L	L	
	Escort**	S	S	S	
	Festiva**	S			
	Mustang				M
	Mustang Convertible				M
	Probe*	S			
	Taurus		M	M	
	Tempo	M	M		
	Tempo 4WD	M	M		
	Thunderbird*	L			
GMC	Safari Van			L	
Honda	Accord	M	M		
	Civic**	S	S	S	
	Civic CRX**				S
	Civic 4WD**			S	
	Prelude**	M			

Passenger Cars (Cont'd)

Make	Series	2-Door Model	4-Door Model	S.W./ Pass.Van	Sports/ Specialty
Hyundai	Excel	S	S		
	Sonata*		M		
Isuzu	I-Mark	S	S		
	Impulse	S			
Jaguar	XJ-S				M
	XJ-S Convertible*				M
	XJ6**				L
Lincoln	Continental**				M
	Mark VII				M
	Town Car				L
Lotus	Esprit Turbo**				S
Maserati	Biturbo/228				S
	Spyder Convertible				S
	425/430				M
Mazda	MX-6**	S			
	RX-7				S
	RX-7 Convertible**				S
	Wagon*			L	
	Wagon 4WD*			L	
	323	S	S	S	
	323 4WD**	S			
	626**		M		
	929**		M		
Mercedes-Benz	190D/E				M
	260E/300D/E				L
	300CE**				M
	300SE**				L
	300TD/TE				L
	560SEC				L
	560SL Convertible				S
	SEL/SDL Series				L
Mercury	Cougar*	L			
	Grand Marquis		L	L	
	Sable		M	M	
	Topaz	M	M		
	Tracer	S	S	S**	

Passenger Cars (Cont'd)

Make	Series	2-Door Model	4-Door Model	S.W./ Pass.Van	Sports/ Specialty
Merkur	Scorpio				M
	XR4Ti	M			
Mitsubishi	Galant*		M		
	Mirage*	S	S		
	Precis**	S	S		
	Sigma/Galant		M		
	Starion	S			
	Wagon			S	
Nissan	Maxima		M		
	Pulsar	S			
	Sentra	S	S	S	
	Sentra 4WD			S	
	Stanza		M		
	240SX*	S			
	300ZX				S
	300ZX 2+2				S
Oldsmobile	Calais	M	M		
	Custom Cruiser			L	
	Cutlass Supreme**	M			
	Cutlass Ciera	M	M	M	
	Eighty-Eight	L	L		
	Ninety-Eight		L		
	Toronado				M
Panther	Kallista Convertible**				M
Peugeot	405*		M		
	505		M	L	
Plymouth	Acclaim*		M		
	Gran Fury		L		
	Grand Voyager**			L	
	Horizon		S		
	Reliant	M	M		
	Sundance	S	S		
	Voyager			L	
Pontiac	Bonneville		L		
	Firebird				M
	Grand Am	M	M		
	Grand Prix**	M			
	Lemans**	S	S		

Passenger Cars (Cont'd)

Make	Series	2-Door Model	4-Door Model	S.W./ Pass.Van	Sports/ Specialty
Pontiac (cont'd)	Parisienne*		L		
	Safari Wagon			L	
	Sunbird	M	M		
	Sunbird Convertible				M
	6000		M	M	
	6000 4WD*		M		
Porsche	911 Coupe				S
	911 Targa/Cabriolet				S
	911 4WD 2D*				S
	928 Coupe				S
	944 Convertible*				S
	944 Coupe				S
Rolls Royce	Corniche Convertible				L
	Silver Spirit				L
	Silver Spur				L
Saab	900	S	S		
	900 Convertible				S
	9000				M
Sterling	825/827				M
Subaru	DL/GL	S	S	S	
	DL/GL 4WD	S	S	S	
	Hatchback	S			
	Hatchback 4WD	S			
	Justy	S			
	Justy 4WD**	S			
	XT Coupe	S			
	XT Coupe 4WD	S			
Suzuki	Swift*	S	S		
Toyota	Camry		M	M	
	Camry 4WD**		M		
	Celica	S			
	Celica Convertible				S
	Celica 4WD**	S			
	Corolla**	S	S	S	
	Corolla 4WD		S*	S**	
	Cressida		M		

Passenger Cars (Cont'd)

Make	Series	2-Door Model	4-Door Model	S.W./ Pass.Van	Sports/ Specialty
Toyota (cont'd)					
	MR2				S
	Supra				M
	Tercel	S	S		
	Van			S	
	Van 4WD			S	
TVR	280i Convertible				S
Volkswagen	Cabriolet				S
	Fox	S	S	S	
	Golf	S	S		
	GTI	S			
	Jetta	S	S		
	Vanagon			S	
Volvo	240		M	M	
	740/760 SW				M
	740/760 4D				M
	780				M
Yugo	Yugo	S			

* 1989 Models Only
** 1988 and 1989 Models Only

S - Small
M - Midsize
L - Large

APPENDIX D-2

1987-89 Vehicle Series Designations -- Vans, Pickups, And Utility Vehicles

Vehicle Class	Make	Series
Vans	Chevrolet	Astro Cargo Van Chevy Van (1/2T) Chevy Van (3/4T) Sportvan (1/2T) Sportvan (3/4T)
	Dodge	B150 (1/2T) B150 Cargo Van B250 (3/4T) B250 Cargo Van Cargo Minivan Extended Cargo Minivan**
	Ford	Aerostar Cargo Van Aerostar Extended Cargo Van* E-150 Club Wagon (1/2-3/4T) E-150 Econoline (1/2-3/4T) E-250 Club Wagon (3/4T) E-250 Econoline (3/4T)
	GMC	Rally Wagon (1/2T) Rally Wagon (3/4T) Safari Cargo Van Vandura (1/2T) Vandura (3/4T)
	Mazda	Van*
	Mitsubishi	Cargo Van
	Toyota	Cargo Van Cargo Van 4x4
	Volkswagen	Vanagon Camper

Vans, Pickups, And Utility Vehicles (Cont'd)

Vehicle Class	Make	Series	Size Class
Pickups	Chevrolet	S10	S
		S10 Extended Cab	S
		T10 Extended Cab 4x4	S
		T10 4x4	S
		1500 Extended Cab (1/2T)**	Std
		1500 Extended Cab (1/2T) 4x4**	Std
		1500 Series (1/2T)**	Std
		1500 Series (1/2T) 4x4**	Std
		20 Crew Cab (3/4T)	Std
		2500 Extended Cab (3/4T)**	Std
		2500 Extended Cab (3/4T) 4x4**	Std
		2500 Series (3/4T)**	Std
		2500 Series (3/4T) 4x4**	Std
	Dodge	Dakota (1/2T)	S
		Dakota (1/2T) 4x4	S
		D150 (1/2T)	Std
		D250 (3/4T)	Std
		Ram50	S
		Ram50 Extended Cab**	S
		Ram50 Extended Cab 4x4**	S
		Ram50 Long Bed	S
		Ram50 Long Bed 4x4	S
		Ram50 4x4	S
		W150 (1/2T) 4x4	Std
		W250 (3/4T) 4x4	Std
	Ford	Courier	S
		Courier 4x4	S
		F-150 (1/2-3/4T)	Std
		F-150 (1/2-3/4T) 4x4	Std
		F-150 Super Cab	Std
		F-150 Super Cab 4x4	Std
		F-250 (3/4T)	Std
		F-250 (3/4T) 4x4	Std
		F-250 Super Cab	Std
		F-250 Super Cab 4x4	Std
		Ranger	S
		Ranger Super Cab	S
		Ranger Super Cab 4x4	S
		Ranger 4x4	S
	GMC	S15	S
		S15 Extended Cab	S
		T15 Extended Cab 4x4	S
		T15 4x4	S
		1500 Extended Cab**	Std

Vans, Pickups, And Utility Vehicles (Cont'd)

Vehicle Class	Make	Series	Size Class
Pickups (Cont'd)	GMC	1500 Extended Cab 4x4**	Std
		1500 Series (1/2T)**	Std
		1500 Series (1/2T) 4x4**	Std
		2500 Crew Cab (3/4T)	Std
		2500 Extended Cab**	Std
		2500 Extended Cab 4x4**	Std
		2500 Series (3/4T)**	Std
		2500 Series (3/4T) 4x4**	Std
	Isuzu	Long Bed**	S
		Long Bed 4x4**	S
		Long Cab (1/2T)**	S
		Long Cab (1/2T) 4x4**	S
		Standard Bed**	S
		Standard Bed 4x4**	S
	Jeep	Comanche	S
		Comanche 4x4	S
	Mazda	B Series Cab Plus	S
		B Series Cab Plus 4x4	S
		B Series Long Bed	S
		B Series Standard Bed	S
		B Series Standard Bed 4x4	S
	Mitsubishi	Extended Cab**	S
		Extended Cab 4x4**	S
		Long Bed	S
		Long Bed 4x4	S
		Standard Bed	S
		Standard Bed 4x4	S
	Nissan	King Cab	S
		King Cab 4x4	S
		Standard Bed	S
		Standard Bed 4x4	S
	Toyota	Long Bed (1/2T)*	S
		Long Bed (1/2T) 4x4*	S
		Standard Bed*	S
		Standard Bed 4x4*	S
		Xtra Cab*	S
		Xtra Cab 4x4*	Std
		4Runner	Std

Vans, Pickups, And Utility Vehicles (Cont'd)

Vehicle Class	Make	Series	Size Class
Utility Vehicles	Chevrolet/Geo	K10 Blazer (1/2T) 4x4	I
		Suburban (1/2T)	L
		Suburban (1/2T) 4x4	L
		Suburban (3/4T)	L
		Suburban (3/4T) 4x4	L
		S10 Blazer	I
		Tracker 4x4*	S
		T10 Blazer 4x4	I
	Dodge	Ramcharger	I
		Ramcharger 4x4	I
	Dodge/Mitsubishi	Raider 4x4	S
	Ford	Bronco 4x4	I
		Bronco II	S
		Bronco II 4x4	S
	GMC	Jimmy (1/2T) 4x4	I
		Suburban (1/2T)	L
		Suburban (1/2T) 4x4	L
		Suburban (3/4T)	L
		Suburban (3/4T) 4x4	L
		S15 Jimmy	I
		T15 Jimmy 4x4	I
	Isuzu	Amigo*	S
		Amigo 4x4*	S
		Trooper II 4x4	I
	Jeep	Cherokee	I
		Cherokee 4x4	I
		Grand Wagoneer 4x4	I
		Wagoneer 4x4	I
		Wrangler 4x4	S
	Laforza	Laforza SW 4x4*	I

Vans, Pickups, And Utility Vehicles (Cont'd)

Vehicle Class	Make	Series	Size Class
Utility Vehicles (Cont'd)	Mitsubishi	Montero 2D 4x4	S
		Montero 4D 4x4*	I
	Nissan	Pathfinder*	I
		Pathfinder 4x4	I
	Range Rover	Range Rover 4x4	I
	Suzuki	Samurai Hardtop 4x4	S
		Samurai Convertible 4x4	S
		Sidekick Hardtop 4x4*	S
		Sidekick Convertible 4x4*	S
	Toyota	Land Cruiser	I
		4Runner Wagon	I

* 1989 Models Only
** 1988 and 1989 Models Only

S - Small
I - Intermediate
L - Large
Std - Standard

Selected Publications

R89-2 *Insurance Collision Report, Passenger Vehicles, Vans, Pickups, and Utility Vehicles, 1989 Models During Their First Year, 1988 Models During their First Two years, 1987 Models During Their First Three Years*, December 1989.

R90-1 *Insurance Collision Report, Initial Results for 1990 Automobiles, July* 1990.

T89-1 *Insurance Theft Report; Passenger Cars, Vans, Pickups, and Utility Vehicles: 1989 Models During Their First Year, 1988 Models During Their First Two Years, 1987 Models During Their First Three Years*, May 1990.

A-5 *Automobile Insurance Losses, Collision Coverages; Relationships Between Losses and Vehicle Body Style, 1974 and 1975 Models*, December 1975.

A-7 *Automobile Insurance Losses, Collision Coverages; Annual Increases and Seasonal Variations 1972, 1973, 1974 and 1975 Models*, June 1976.

A-9 *Automobile Insurance Losses, Collision Coverage; A Comparison of Collision Claim Size Distributions for 1974-76 Models*, November 1977.

A-11 *Automobile Insurance Losses, Collision Coverage; The Consistency of the Loss Experience of Specific Vehicles Produced in Several Years, 1975 to 1978 Models*, June 1979.

A-12 *Automobile Insurance Losses, Collision Coverage; An Assessment of the Effects of the Federal Safety Bumper Standard on the Losses for 1972 Through 1978 Models*, June 1980.

A-13 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverage; The Effects of Car Size on Crash Losses, 1977-1980 Models*, May 1981.

A-14 *Automobile Insurance Losses, Personal Injury Protection and Collision Coverage; Comparisons of the Loss Experience of Two- and Four-Door Cars, 1978, 1979, and 1980 Models*, May 1981.

A-16 *Automobile Insurance Losses, Collision Coverages; The Frequency of Claims Involving Salvage; Subcompact and Compact Cars; 1980 Models*, January 1982.

A-17 *Insurance Losses, Comprehensive Coverage; Non-Crash Fire Losses; 1979-1980 Models*, February 1982.

A-18 *Insurance Losses, Theft Coverage; The Distribution of Theft Loss Payment Amounts; Passenger Cars, Vans, Pickups, and Utility Vehicles; 1981 Models During Their First Year, 1980 Models During Their First Two Years, 1979 Models During Their First Three Years*, June 1982.

A-19 *Insurance Losses, Theft Coverages; A Comparison of the Theft Loss Experience of General Motors Passenger Cars With and Without Factory-Installed Theft Deterrent Systems; 1980-1981 Models*, January 1983.

A-20 *Insurance Losses, Collision Coverages, A Comparison of the Collision Loss Experience of Subaru Models with 5 and 2.5 MPH Bumpers*, April 1983.

A-21 *Insurance Losses, Personal Injury Protection Coverages, Injury Claim Frequencies for Volkswagen Rabbits with Automatic and Manual Seat Belts, 1981, and 1982 Models*, April 1984.

A-22 *Insurance Losses, Collision Coverages, An Analysis of Salvage Credits, 1977 Through 1982 Model Year Cars*, July 1984.

A-23 *Injury and Collision Losses by Engine Option, Selected 1983 Models*, October 1985.

A-24 *Comparison of the Insurance Loss Experience of Unibody and Frame Construction Cars After a Collision Repair, 1981-82 Models*, October 1985.

A-25 *Relationships Between Losses and Vehicle Density, 1982-84 Models*, October 1985.

A-26 *Consistency of Model Year Injury Claim Frequency Results for Selected 1981-1983 Models*, May 1986.

A-27 *A Preliminary Evaluation of New York and New Jersey Insurance Injury Claim Results Before and After Enactment of Mandatory Seat Belt Legislation; 1983-85 Models*, May 1986.

A-28 *Insurance Injury Loss Experience in Eight States with Seat Belt Laws, 1983-86 Models*, July 1988.

A-29 *Insurance Losses Based on Garaging Location, 1985-87 Models*, June 1988.

A-30 *Automobile Insurance Losses, A Comparison of California and National Results*, May 1988.

A-31 *The Effect of Vehicle Component Parts Marking on Theft*, December 1989.

A-32 *Automobile Theft Losses By Size of Claim and in Selected States*, December 1989.

A-33 *Noncrash Fire Losses, 1986-88*, December 1989.

A-34 *An Analysis of Total Losses, 1984-88 Models*, May 1990.

Sponsoring Companies Aetna Casualty and Surety Company Aetna Casualty & Surety Company of America Aetna Casualty & Surety Company of Illinois AgSecurity Insurance Company Alaska Pacific Assurance Company Alfa Mutual General Insurance Company Alfa Mutual Insurance Company Alliance Assurance Company Ltd. Allied Insurance Company Allstate Indemnity Company Allstate Insurance Company Allstate Property and Casualty Insurance Company American & Foreign Insurance Company American Casualty Company of Reading Pennsylvania American Economy Insurance Company American Family Mutual Insurance Company American General Fire & Casualty Company American Lloyds Insurance Company American Manufacturers Mutual Insurance Company American Motorist Insurance Company American Protection Insurance Company American States Insurance Company American States Insurance Company of Texas American States Preferred Insurance Company Amica Mutual Insurance Company Assurance Company of America Athena Assurance Company Atlanta Casualty Company Atlantic Employers Insurance Company Atlas Assurance Company of America Automobile Insurance Company of Hartford Bankers Standard Insurance Company Bituminous Casualty Corporation Bituminous Fire & Marine Insurance Company Boston Old Colony Insurance Company Brotherhood Mutual Insurance Company Buckeye Union Insurance Company CalFarm Insurance Company Camden Fire Insurance Association Casualty Insurance Company Century Indemnity Company Charter Oak Fire Insurance Company Chubb Insurance Company of New Jersey Chubb Lloyds Insurance Company of Texas Church Mutual Insurance Company CIGNA Fire Underwriters Insurance Company CIGNA Insurance Company CIGNA Insurance Company of Illinois CIGNA Insurance Company of the Midwest CIGNA Insurance Company of Ohio CIGNA Insurance Company of Texas CIGNA Property and Casualty Insurance Company CNA Casualty of California Colonial Insurance Company Columbia Casualty Company Commercial Insurance Company of Newark Concord General Mutual Insurance Company Continental Casualty Company Continental Insurance Company Continental Insurance Company of New Jersey Cotton States Mutual Insurance Company Country Casualty Insurance Company Country Mutual Insurance Company Country Preferred Insurance Company Countrywide Insurance Company Covenant Insurance Company Criterion Casualty Company CUMIS Insurance Society Inc. Economy Fire and Casualty Company Empire Insurance Company Employers Insurance of Wausau Employers Mutual Casualty Company Erie Insurance Exchange Farm Bureau Mutual Insurance Company Inc. of Kansas Farm Bureau Mutual Insurance Company of Idaho Farm Bureau Mutual Insurance Company of Iowa Farm Bureau Mutual Insurance Company of Nebraska Farmers & Merchants Insurance Company Farmers Automobile Association of Pekin Illinois Farmers Insurance Company Inc. Farmers Insurance Company of Arizona Farmers Insurance Company of Idaho Farmers Insurance Company of Oregon Farmers Insurance Company of Washington Farmers Insurance Exchange Farmers Insurance of Columbus Inc. Farmers Mutual Insurance Company of Nebraska Farmers Texas County Mutual Insurance Company Farmington Casualty Company Farmland Mutual Insurance Company Federal Insurance Company Federal Kemper Insurance Company The Fidelity & Casualty Company of New York Fidelity and Deposit Company of Maryland Fidelity & Guaranty Insurance Company Fidelity & Guaranty Insurance Underwriters Inc. Firemen's Insurance Company of Newark First Fire and Casualty Insurance of Hawaii Inc. First Indemnity Insurance of Hawaii Inc. First Insurance Company of Hawaii Ltd. First National Insurance Company of America Foundation Reserve Insurance Company Inc. GEICO General Insurance Company GEICO Indemnity Company General Accident Insurance Company of America General Insurance Company of America The Glens Falls Insurance Company Globe Indemnity Company Gothaer Insurance Company Government Employees Insurance Company Great Northern Insurance Company Great West Casualty Company Green Mountain Insurance Company Inc. Grinnell Mutual Reinsurance Company Guaranty National Insurance Company Halcyon Insurance Company Harbor Insurance Company Harleysville Mutual Insurance Company Hartford Accident and Indemnity Company Hartford Casualty Insurance Company Hartford Fire Insurance Company Hartford Insurance Company of Connecticut Hartford Insurance Company of Illinois Hartford Insurance Company of the Midwest Hartford Insurance Company of the Southeast IDS Property Casualty Insurance Company Illinois Employers Insurance of Wausau Illinois Farmers Insurance Company Indemnity Insurance Company of North America Indiana Farmers Mutual Insurance Company Insurance Company of North America John Deere Insurance Company Kansas City Fire and Marine Insurance Company Kentucky Central Insurance Company KFB Insurance Company Inc. League General Insurance Company Liberty Insurance Corporation Liberty Mutual Fire Insurance Company Liberty Mutual Insurance Company Liberty Northwest Insurance Corporation London Assurance Lumbermens Mutual Casualty Company Maine Bonding and Casualty Company Maryland Casualty Company Mayflower Insurance Company Ltd. Merastar Insurance Company Merit Insurance Company Metropolitan Property and Liability Insurance Company Michigan Educational Employees Mutual Insurance Company Michigan Mutual Insurance Company Mid-Century Insurance Company Mid-Century Insurance Company of Texas Middlesex Mutual Assurance Company Midwest Mutual Insurance Company Montgomery Mutual Insurance Company Motor Club Insurance Association of Nebraska MCA Insurance Company Motors Insurance Corporation National-Ben Franklin Insurance Company of Illinois National Casualty Company National Fire Insurance Company of Hartford National General Fire & Casualty Company National General Insurance Company of Missouri National Grange Mutual Insurance Company National Standard Insurance Company Nationwide Agribusiness Insurance Company Nationwide General Insurance Company Nationwide Indemnity Insurance Company Nationwide Mutual Fire Insurance Company Nationwide Mutual Insurance Company Nationwide Property and Casualty Insurance Company New York Underwriters Insurance Company Newark Insurance Company Niagara Fire Insurance Company North Carolina Farm Bureau Mutual Insurance Company North Pacific Insurance Company Northbrook Indemnity Company Northbrook National Insurance Company Northbrook Property and Casualty Insurance Company Northern Insurance Company of New York Northwestern Pacific Indemnity Company Nutmeg Insurance Company Oklahoma Farm Bureau Mutual Insurance Company Oregon Automobile Insurance Company Pacific Employers Insurance Company Pacific Indemnity Company Pacific Insurance Company Pacific Insurance Company Ltd. Pekin Insurance Company PEMCO Insurance Company PEMCO Mutual Insurance Company Pennsylvania General Insurance Company Phoenix Insurance Company Potomac Insurance Company of Illinois Preferred Risk Insurance Company Progressive American Insurance Company Progressive Casualty Insurance Company Progressive County Mutual Insurance Company Progressive Gulf Insurance Company Progressive Mountain Insurance Company Progressive Northern Insurance Company Progressive Northwestern Insurance Company Progressive Preferred Insurance Company Progressive Southeastern Insurance Company Progressive Specialty Insurance Company Prudential Commercial Insurance Company Prudential General Insurance Company Prudential-LMI Commercial Insurance Company Prudential Property and Casualty Insurance Company The Prudential Property and Casualty Insurance Company of New Jersey Puerto Rican-American Insurance Company Ramsey Insurance Company Ranger Insurance Company Royal Indemnity Company Royal Insurance Company of America Royal Milbank Insurance Companies SAFECO Insurance Company of America SAFECO Insurance Company of Illinois SAFECO Lloyds Insurance Company SAFECO National Insurance Company Safeguard Insurance Company Scottsdale Insurance Company Sea Insurance Company Ltd. SECURA Insurance Selective Insurance Company of America Selective Insurance Company of the Southeast Selective Way Insurance Company Sentinel Insurance Company Ltd. Shelter General Insurance Company Shelter Mutual Insurance Company Shield Insurance Company Southern Guaranty Insurance Company Southern Heritage Insurance Company Standard Fire Insurance Company State Auto Insurance Company State Farm County Mutual Insurance Company of Texas State Farm Fire and Casualty Company State Farm General Insurance Company State Farm Mutual Automobile Insurance Company St. Paul Fire and Casualty Insurance Company St. Paul Fire & Marine Insurance Company St. Paul Guardian Insurance Company St. Paul Indemnity Insurance Company St. Paul Insurance Company St. Paul Insurance Company of Illinois St. Paul Insurance Company of North Dakota St. Paul Lloyds Insurance Company St. Paul Mercury Insurance Company St. Paul Property and Casualty Insurance Company Sun Insurance Office Ltd. Texas Farmers Insurance Company Texas Pacific Indemnity Company Transamerica Indemnity Company Transamerica Insurance Company Transamerica Insurance Company of Michigan Transamerica Insurance Company of Texas Transamerica Insurance Corporation of America Transamerica Premier Insurance Company Transamerica Specialty Insurance Company Transcontinental Insurance Company Transportation Insurance Company Travelers Indemnity Company Travelers Indemnity Company of America Travelers Indemnity Company of Illinois Travelers Indemnity Company of Rhode Island Travelers Insurance Company Truck Insurance Exchange Twin City Fire Insurance Company United Services Automobile Association United States Fidelity and Guaranty Company USAA Casualty Insurance Company Utica Mutual Insurance Company Valiant Insurance Company Valley Forge Insurance Company Vigilant Insurance Company Wausau Underwriters Insurance Company